CLAIMS

What is claimed is:

1. In a vehicle having at least one drive axle and at least one non-driven axle, said at least one drive axle and said at least one non-driven axle including wheels, said vehicle further having an anti-lock brake system, an anti-slip regulation system including one or more valves for controlling the delivery of brake pressure from a source of said pressure to one or more brake cylinders of said at least one drive axle, at least one further system constructed and arranged to automatically brake said vehicle by braking said at least one drive axle via said one or more valves of said anti-slip regulation system, and an electronic control unit for controlling said anti-lock brake system, said anti-slip regulation system and said at least one further system, a method for braking said vehicle comprising the steps of determining wheel speeds associated with said at least one non-driven axle and wheel speeds associated with said at least one drive axle, comparing said wheel speeds associated with said at least one non-driven axle with said wheel speeds associated with said at least one drive axle, and providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system if at least one of said wheel speeds associated with said at least one non-driven axle is less than said wheel speeds associated with said at least one drive axle by at least a pre-defined value.

2. The method according to claim 1, wherein said at least one further system is an adaptive cruise control system.

3. The method according to claim 1, wherein said at least one further system is a rollover stability control system.

4. The method according to claim 1, wherein said step of comparing said wheel speeds associated with said at least one non-driven axle with said wheel speeds associated with said at least one drive axle further includes comparing said wheel speeds associated with said at least one non-driven axle with a vehicle reference speed formed by said anti-lock brake system.

5. The method according to claim 1, further comprising the steps of ascertaining whether an anti-lock brake system control action is initiated at said wheels of said at least one non-driven axle as a result of driver braking demand, and, if said anti-lock brake system control action is detected, providing said brake pressure to said brake cylinders of said at least one drive axle in response to said driver braking demand.

6. The method according to claim 1, wherein, if said vehicle is traveling a straight course, said step of comparing said wheel speeds associated with said at least one non-driven axle with said wheel speeds associated with said at least one drive axle includes comparing wheel speeds of said wheels of said at least one non-driven axle with at least one of (i) said wheel speeds associated with said at least one drive axle and (ii) a vehicle reference speed formed by said anti-lock brake system.

7. The method according to claim 1, wherein, if said vehicle is traveling on a curve, said step of comparing said wheel speeds associated with said at least one non-driven axle with said wheel speeds associated with said at least one drive axle includes comparing wheel speeds of ones of said wheels that are disposed on the inside of the curve with a vehicle reference speed, said vehicle reference speed being based on the characteristics of the inside of the curve.

8. The method according to claim 1, wherein said step of providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system includes the step of closing said one or more valves of said anti-slip regulation system, and further comprising the step of checking whether vehicle deceleration associated with said driver braking demand is greater than the previous deceleration of said vehicle.

9. In a vehicle having at least one drive axle and at least one non-driven axle, said at least one drive axle and said at least one non-driven axle including wheels, said vehicle further having an anti-lock brake system, an anti-slip regulation system including one or more valves for controlling the delivery of brake pressure from a source of said pressure to one or more brake cylinders of said at least one drive axle, at least one further system constructed and arranged to automatically brake said vehicle by braking said at least one drive axle via said one or more valves of said anti-slip regulation system, and an electronic control unit for controlling said anti-lock brake system, said anti-slip regulation system and said at least one further system, a method for braking said vehicle comprising the steps of determining wheel speeds associated with said at least one non-driven axle, comparing said wheel speeds

associated with said at least one non-driven axle with a vehicle reference speed formed by said anti-lock brake system, and providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system if at least one of said wheel speeds associated with said at least one non-driven axle is less than said vehicle reference speed by at least a pre-defined value.

10. The method according to claim 9, wherein said at least one further system is an adaptive cruise control system.

11. The method according to claim 9, wherein said at least one further system is a rollover stability control system.

12. The method according to claim 9, wherein said step of comparing said wheel speeds associated with said at least one non-driven axle with said vehicle reference speed formed by said anti-lock brake system further includes determining wheel speeds associated with said at least one drive axle and comparing said wheel speeds associated with said at least one non-driven axle with said wheel speeds associated with said at least one drive axle.

13. The method according to claim 9, further comprising the steps of ascertaining whether an anti-lock brake system control action is initiated at said wheels of said at least one non-driven axle as a result of driver braking demand, and, if said anti-lock brake system control action is detected, providing said brake pressure to said brake cylinders of said at least one drive axle in response to said driver braking demand.

14. The method according to claim 9, wherein, if said vehicle is traveling a straight course, said step of comparing said wheel speeds associated with said at least one non-driven axle with said vehicle reference speed formed by said anti-lock brake system includes comparing wheel speeds of said wheels of said at least one non-driven axle with at least one of (i) said vehicle reference speed formed by said anti-lock brake system and (ii) wheel speeds associated with said at least one drive axle.

15. The method according to claim 9, wherein, if said vehicle is traveling on a curve, said step of comparing said wheel speeds associated with said at least one non-driven axle with said vehicle reference speed includes comparing wheel speeds of ones of said wheels that are disposed on the inside of the curve with said vehicle reference speed, said vehicle reference speed being adjusted based on the characteristics of the inside of the curve.

16. The method according to claim 9, wherein said step of providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system includes the step of closing said one or more valves of said anti-slip regulation system, and further comprising the step of checking whether vehicle deceleration associated with said driver braking demand is greater than the previous deceleration of said vehicle.

17. A vehicle braking system for a vehicle having at least one drive axle and at least one non-driven axle, said at least one drive axle and said at least one non-driven axle including wheels, said vehicle further having an anti-lock brake system, an anti-slip regulation system including one or more valves for controlling the delivery of brake pressure from a source of said pressure to one or more brake cylinders of said at least one drive axle, at least one further system constructed and arranged to automatically brake said vehicle by braking said at least one drive axle via said one or more valves of said anti-slip regulation system, and an electronic control unit for controlling said anti-lock brake system, said anti-slip regulation system and said at least one further system, the vehicle braking system comprising means for determining wheel speeds associated with said at least one non-driven axle and wheel speeds associated with said at least one drive axle, means for comparing said wheel speeds associated with said at least one non-driven axle with said wheel speeds associated with said at least one drive axle, and means for providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system if at least one of said wheel speeds associated with said at least one non-driven axle is less than said wheel speeds associated with said at least one drive axle by at least a pre-defined value.

18. The system according to claim 17, wherein said at least one further system is an adaptive cruise control system.

19. The system according to claim 17, wherein said at least one further system is a rollover stability control system.

20. The system according to claim 17, further comprising means for comparing said wheel speeds associated with said at least one non-driven axle with a vehicle reference speed formed by said anti-lock brake system.

21. The system according to claim 17, further comprising means for ascertaining whether an anti-lock brake system control action is initiated at said wheels of said at least one non-driven axle as a result of driver braking demand, and means for providing said brake pressure to said brake cylinders of said at least one drive axle in response to said driver braking demand if said anti-lock brake system control action is detected.

22. The system according to claim 17, wherein said means for providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system includes means for closing said one or more valves of said anti-slip regulation system, and further comprising means for checking whether vehicle deceleration associated with said driver braking demand is greater than the previous deceleration of said vehicle.

23. A vehicle braking system for a vehicle having at least one drive axle and at least one non-driven axle, said at least one drive axle and said at least one non-driven axle including wheels, said vehicle further having an anti-lock brake system, an anti-slip regulation system including one or more valves for controlling the delivery of brake pressure from a source of said pressure to one or more brake cylinders of said at least one drive axle, at least one further system constructed and arranged to automatically brake said vehicle by braking said at least one drive axle via said one or more valves of said anti-slip regulation system, and

an electronic control unit for controlling said anti-lock brake system, said anti-slip regulation system and said at least one further system, said vehicle braking system comprising means for determining wheel speeds associated with said at least one non-driven axle, means for comparing said wheel speeds associated with said at least one non-driven axle with a vehicle reference speed formed by said anti-lock brake system, and means for providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system if at least one of said wheel speeds associated with said at least one non-driven axle is less than said vehicle reference speed by at least a pre-defined value.

24. The system according to claim 23, wherein said at least one further system is an adaptive cruise control system.

25. The system according to claim 23, wherein said at least one further system is a rollover stability control system.

26. The system according to claim 23, further comprising means for determining wheel speeds associated with said at least one drive axle, and means for comparing said wheel speeds associated with said at least one non-driven axle with said wheel speeds associated with said at least one drive axle.

27. The system according to claim 23, further comprising means for ascertaining whether an anti-lock brake system control action is initiated at said wheels of said at least one non-driven axle as a result of driver braking demand, and means for providing said brake pressure to said brake cylinders of said at least one drive axle in response to said driver braking demand if said anti-lock brake system control action is detected.

28. The system according to claim 23, wherein said means for providing brake pressure in response to driver braking demand to said brake cylinders of said at least one drive axle irrespective of any automatic braking by said at least one further system includes means for closing said one or more valves of said anti-slip regulation system, and further comprising means for checking whether vehicle deceleration associated with said driver braking demand is greater than the previous deceleration of said vehicle.